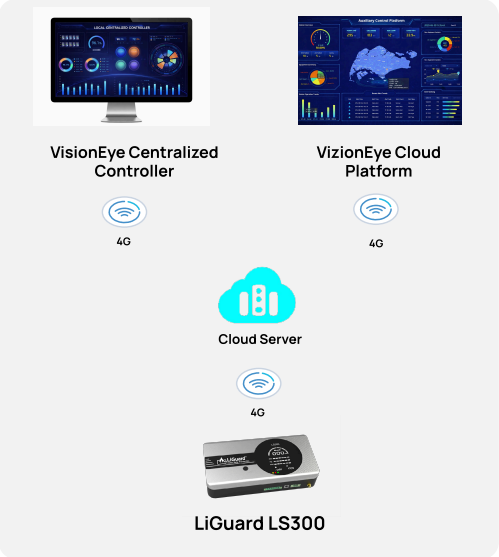
LS300 LiGuard BESS Active Nanoparticle Gas Detector (Cluster)

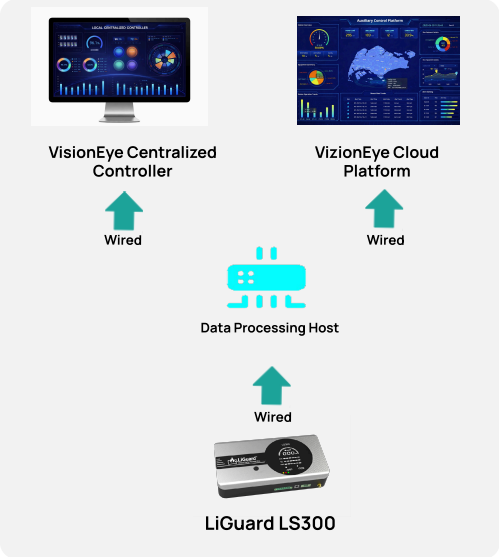
Product Overview

The PTSenR™ LS300 LiGuard BESS Active Nanoparticle Gas Detector (Cluster) is an advanced active hazard monitoring device engineered for ultra-early detection of risks in Battery Energy Storage Systems (BESS). Designed to safeguard critical energy infrastructure, the LS300 combines nano-particle detection, characteristic gas monitoring, and active online sampling to deliver precise, real-time warnings of overheating, discharge, and potential thermal runaway events. Its detection principle is based on Mie scattering technology, which enables accurate identification of microscopic particles released during the early stages of equipment or material overheating. When a beam of light irradiates these particles—typically ranging from 0.002 μm to 0.05 μm—the light scatters in all directions.

By analyzing the scattering parameters, the LS300 determines particle size and concentration with exceptional precision. This process, fully aligned with Mie scattering theory, is enhanced by intelligent algorithms that quantify particle density and detect abnormal trends long before visible smoke or gas escalation occurs. Through this integration of optical physics and smart analytics, the LS300 provides a robust, multi-parameter monitoring solution that ensures comprehensive protection and proactive risk management in modern energy storage environments.

System Architecture





Advantages

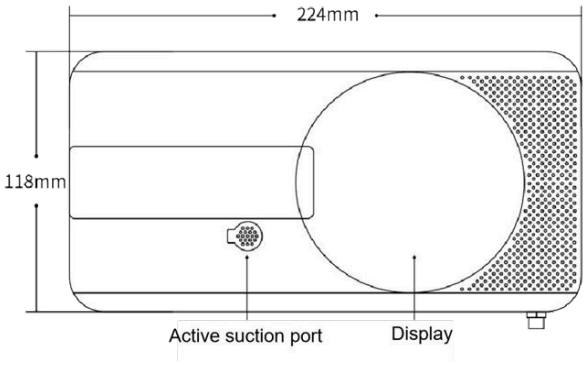
- **Ultra-Early Warning:** Detects hazards before visible smoke or rapid gas escalation.
- **Gas Detection Advantage:** Provides valuable minutes to tens of minutes for emergency response.
- **Reliability:** Multi-parameter monitoring reduces false alarms and increases confidence in alerts.
- **Safety Impact:** Prevents incidents before they escalate, protecting assets and personnel.

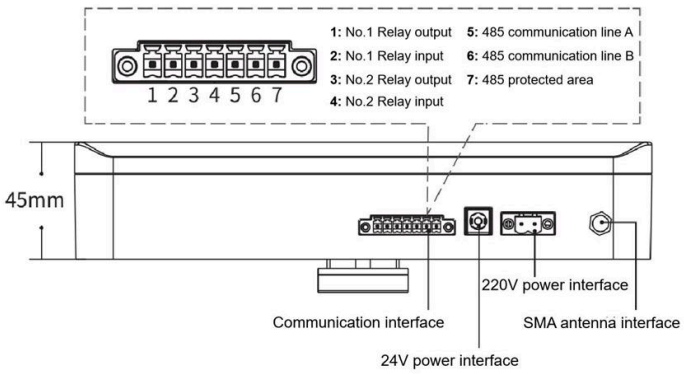
Key Features

- **Nanoparticle Detection**: Detects particle concentration changes in the 100 nm – 20 μm range, enabling ultra-early alerts before visible smoke or rapid gas escalation, and allowing proactive intervention at the initial stage of hazards.
- **Characteristic Gas Monitoring:** Monitors CO, H_2, and volatile gases linked to insulation overheating and thermal runaway, with customized detection functions for different insulation materials to improve reliability.
- **Active Online Monitoring:** Employs active suction sampling instead of passive sensing, eliminating blind spots with real-time monitoring and ensuring continuous hazard awareness.
- **Anti-False Alarm Design:** Incorporates multiple anti-interference measures, offering strong resistance to environmental noise and false triggers, and delivering accurate, trustworthy alerts.

Cabinet Distributed Active Safety Monitoring and Early Warning Device

Dimensions



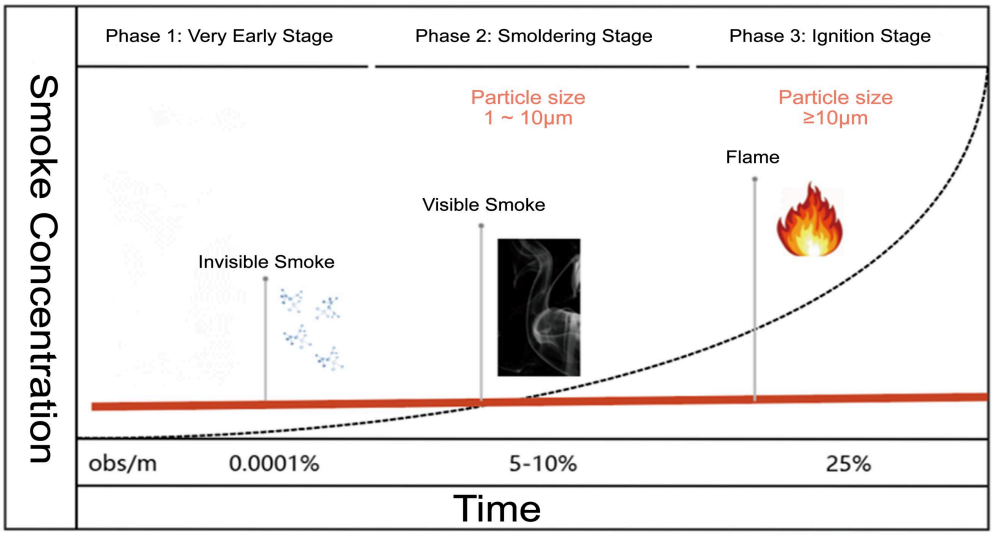


Specifications

Particle Diameter Detection Range	100 nm ~ 20 μm
Particle Detection Resolution	10,000 Particles
Device Sensitivity	0.005 - 20 % obs/m
Input/Output	2 Dry Contacts
Environmental Temperature Monitoring	Range: -20°C~60°C; Accuracy: ±1°C; Resolution: 0.5°C
Environmental Humidity Monitoring	Range: 0~95%RH; Accuracy: ±5%RH; Resolution: 1%RH
Carbon Monoxide Detection	Range: 0~5000 ppm; Rensitivity: 2 ppm
Sampling Method	24h Real-Time Active Inhalation Sampling
Warning Function	Gas Warning + Level 5 Particle Warning + Temperature Warning

Communication Method	Wireless / RS485 / Dry Contact
Communication Protocols	4G, ModBus
Operating Power Supply	AC 220V / DC 24 V
Types Of Gas Detection	CO, H_2, and VOCs
Miscellaneous	
Dimensions Size	224 X 118 X 45 mm
Safety Qualifications	EMC Level 4
Ordering Information	
Part Number	Product Description
LiGuard LS300	PTSenR™ LiGuard BESS Active Thermal Detector (Cluster)

Principle of Thermal Runway



Applications

Battery Energy Storage

UPS Battery Rooms

Installation